Abstract Submitted
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Fragility, slow homogenization and Intermediate Phase in the $\mathbf{Si}_x\mathbf{Ge}_x\mathbf{Te}_{100-2x}$ ternary[1] K. GUNASEKERA, P. BOOLCHAND, University of Cincinnati, S. MAMEDOV, Horiba Jobin Yvon Inc. — Small sized (0.5g) melts were synthesized by reacting pure elements in 5mm ID quartz tubes at 950C, and examined after 1 week and then 2 weeks of reaction. Bulk glass formation is realized in 6%<x<16% range with Tg(x) increasing linearly in 6%<x<12% range, and decreasing thereafter (x>12%). The enthalpy of relaxation at Tg shows a flat bottomed minimum in 7.5%<x<9.0% range with the term increasing sharply at x>9% and at x<7.5%. We identify the 7.5%<x<9.0% range with the Intermediate Phase. Fragility(m) of melts were established in complex Cp measurements, and show a global minimum (m<30) in the IP range, and a value of m=26 at x=8.5%. The slow homogenization of Telluride melts results from the *strong* character of IP melts. Raman scattering, excited using low power density of 785nm radiation, shows evidence of a broad mode near 160cm^{-1} (characteristic of a-Te chains) and a narrower one near 127cm^{-1} (group IV crosslinking units). The scattering strength of the 127cm^{-1} mode increases at the expense of the 160cm^{-1} mode as x increases. The nature of structure evolution with glass composition will be commented upon.

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